

DEFINITIONS OF NEW SPECIES OF LAND SHELLS FROM SOUTH AUSTRALIA.

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[Read September 5, 1899].

Glyptorhagada euglypta, *spec. nov.* Pl. vi., figs. 3a-3c.

Shell sublenticular; spire broadly and flatly conical, slightly raised above the plane of the body-whorl; apex obtuse.

Whorls five, of somewhat rapid increase, nearly flat, separated by a linear impressed suture. Last whorl abruptly and briefly descending at the front, moderately inflated, sharply keeled; flatly convex from the peripheral keel to the suture but interrupted by a narrow flat or slightly depressed area contiguous with the keel; the antep peripheral area sharply curved and merging into the tumid base. Aperture sub-quadrately oval, the major axis transverse; margins feebly thickened and reflected; columella arched, expanded, and reflected over about one-half of the umbilical crater; margins of the aperture united by an adnate callus. Umbilicus moderately wide, but deep, with somewhat precipitous sides, about one-sixth the diameter of the base.

The ground colour is unknown, as all the specimens are bleached, though a few of them still retain traces of rufous colour bands, one at the suture and one occupying the post-peripheral depression.

Sculpture.—The two apical whorls without sculpture or faintly closely transversely striated, the tip is small and immersed, the first whorl relatively large and somewhat inflated, graduating into the narrower and moderately convex second whorl. The ordinary spire-whorls are ornamented by refracted sharply elevated subacute corrugations, which are flatly crenated on their summits; on the last whorl, in particular, intermediate corrugations are crowded at the suture, the intercostal spaces have coincident lineations; the corrugations serrate the keel, about ten in a length of one millimetre measured in the anterior part of the whorl, thence they extend sigmoidally to the umbilicus.

Dimensions.—Major and minor diameters, 25 and 21; height, 13; horizontal and vertical diameters of aperture, 12; diameter of umbilicus, 4.

Locality.—Collected by Mr. H. Y. L. Brown, Government Geologist, at Anabama, situate about one hundred miles north-east from Burra Burra.

The specific name *euglypta* (well-carved), is in allusion to the bold sculpture of the shell.

Affinities.—This species, in respect of sculpture and shape, comes nearest to *Helix* (*Rhagada*) *Bordaensis*, Angas, 1880. It differs from it by larger size, relatively deeper (so that the aperture is different in outline), the spire slightly elevated, the corrugations stronger, more distant and crenulated, and by smaller umbilicus. The type of *G. Bordaensis* seems not to be adult; and all examples known to me of the size of the type have four whorls, not five as stated by Angas; and as indicative that the adult stage has not yet been reached, the body-whorl does not show descension at the front, or the margin of the aperture any reflection, or little or none of the columella.

Angasella polypleura, *spec. nov.* Pl. vi., figs. 2a-2c.

I have always been dubious as to the correctness of my reference to *Helix cyrtopleura*, Pf., of a helicoid snail collected by me in 1878, on the Bunda Plateau of the Great Australian Bight. Authentic specimens of Pfeiffer's species are not extant in any cabinet in Australia, and I cannot learn that the shell has been retaken at the original locality, "Plains near Lake Torrens." The geographical isolation of the two shells, 400 miles apart, with no species of *Angasella* in the intervening area, was suggestive of specific distinctness. Pfeiffer's description and figure are not detailed enough for safe determination of an allied species; but during my visit to England in 1896, I made actual comparisons of the Bunda shell with the type and cotypes of *H. cyrtopleura* in the Natural History Museum, London, with the result that in my opinion they are not conspecific. The new species has a more inflated body-whorl and more numerous riblets. [This is from memory, as my notes on the detailed differences have been lost.]

The following are the chief characters of *A. polypleura*:—Colour in life light-brown becoming sordid-white on the body-whorl. The body-whorl much descends in front, and is ornamented with about sixty sigmoid thread-like ribs the intercostal spaces are coarsely granular, the granules having a tendency to coalesce to form rugae. The peristome is largely and acutely reflected, and its margins joined by a thick adnate callus; the columella is arched and broadly and thickly reflected over part of the umbilical crater. The elevation of the spire varies from almost flat to as much as 4.5 mm. above the plane of the last whorl towards the front. The embryonic part, which consists of two turns, is relatively large and smooth (as seen under a pocket lense).

An average of the measurements of three fairly typical speci-

mens of *A. polypleura* compared with the dimensions of the type of *A. cyrtopleura* is as follows (in decimals of an inch):—

			polypleura.		cyrtopleura.
Greatest diameter	...	...	.71	...	.70
Least diameter	...	...	.61	...	.57
Height of shell	...	...	.42	...	.25
Height of aperture	...	...	.35		

Locality.—Bunda Plateau, Great Australian Bight; in great abundance as dead shells strewn on the surface, but found living buried in the loess-soil at the bases of shrubs.

Flammulina Pulleinei, *spec. nov.* Pl. vi., figs. 1a-1c.

Shell umbilicated, depressedly conical, spire slightly elevated; colour reddish-brown. Whorls four, convex at anterior suture, thence flatly convex to posterior suture, of moderate increase; last whorl rounded at the periphery, base convex and somewhat inflated.

The ornament consists of very oblique subdistant lamella-like corrugations, with intervening close-set coincident lineations (about five or six), and transverse microscopic striæ in the interstitial spaces; the corrugations pass across the periphery in sigmoid curves to the umbilicus.

Aperture slightly oblique, roundly-oval; peristome incomplete, margins distant and acute; the columella-margin is dilated and reflected. Umbilicus of moderate size.

Major diameter, 4.25; minor diameter, 3.75; height, 2.5; diameter of umbilicus, .75.

Two examples taken alive at Carrieton, S.A., by Dr. Robert Pulleine.

This snail has a caudal appendage, and its jaw consists of loosely conjoined plates, and thus far agrees with *Flammulina*. I do not know of any described species with which it is necessary to make comparison; some forms of *F. Fordei* present some resemblance in ornament, but in other respects that species is very different.

Helicina crassidens, *spec. nov.* Pl. vi., fig. 6.

Shell trochiform, somewhat thin, subtranslucent, and subvitreous. Spire regularly conoid, with a submammillary apex. Whorls four and a-half, slightly convex, but perceptibly depressed at the posterior suture; last whorl subangulated at the periphery. The ornament consists of elevated, acute, spiral ridges; five on the body-whorl above the periphery, and about four, more slender and closer ones, on the circumferential portion of the base.

Aperture slightly oblique, semilunar; peristome shortly expanded and subreflected; columella short, simple, gradually

curving to the basal lip; basal lip with a large tooth-like incrasation near to its junction with the columella.

Umbilical callus small, granulated. Operculum unknown.

Major diameter, 4; minor diameter, 3.5; height, 2.5.

One example found by Dr. Robert Pulleine in the rejectamenta of the River Wakefield, at Balaklava, S.A.

This species by its lirate ornament should fall in the group *Perenna*, Guppy, 1867, and on the other hand it has affinity with the *Luciælla*-like species by reason of its dentate peristome, a combination of characters which makes it unnecessary to institute comparisons. As the genus in Australia belongs mainly to the North-East, though reaching South into the coastal tracts of the Northern parts of New South Wales, the question naturally arises, Is the present species indigenous? or is it an accidental importation? But whatever may be its origin, I believe it to be undescribed. It may be urged in explanation of its anomalous geographic position, that a more marked paradox is furnished by *Stenopus rusticus*, which is restricted to the North-East extremity of Queensland and to the coast-cliffs on the east side of St. Vincent Gulf in South Australia.

EXPLANATION OF PLATES.

PLATE VI.

Fig.

- 1a-1c. *Flammulina Pulleinei*, n. sp., p. 247.
- 2a-2c. *Angasella polypleura*, n. sp. p. 246.
- 3a-3c. *Glyptorhagada euglypta*, n. sp., p. 245.
- 4a-4c. *Cyclostrema Mayii*, n. sp., p. 218.
- 5a-5c. *Liotia Mayana*, n. sp., p. 227.
- 6. *Helicina crassidens*, n. sp., p. 247.
- 7a-7b. *Liotia compacta*, Petterd, p. 225.

PLATE VII.

- 1a-1b. *Cyclostrema caperatum*, n. sp., p. 216.
- 2a-2c. *Cyclostrema charopa*, n. sp., p. 217.
- 3a-3b. *Cyclostrema inscriptum*, n. sp., p. 216.
- 4. *Cyclostrema delectabile*, n. sp., p. 216.
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- 9. *Rissoina punctatissima*, n. sp., p. 242.
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